

Prior Art Rejections

Rejections Under §103(a)

Claim 1 stands rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,226,593 "Kurz" hereafter) in view of U.S. Patent No. 5,696,681 ("Hrovat" hereafter). Claim 2 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Kurz and Hrovat further in view of U.S. Patent No. 6,058,347 ("Yamamura" hereafter). Applicants respectfully traverse these rejections for at least the following reasons.

As set forth in Note 6 of the pending Office Action, Kurz fails to disclose modifying a brake signal in response to a monitored brake torque compared with an established brake torque threshold as claimed. The Office Action asserts, however, that Hrovat discloses modifying a brake signal in response to a monitored brake torque compared with an established brake torque threshold, and that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kurz with Hrovat. Applicants respectfully traverse this assertion.

Kurz is directed at a method for braking a motor vehicle at low speeds in order to avoid a collision with an obstacle in its immediate vicinity (see Abstract). Accordingly, the brake pressure is generated at least partially independently of the driver (see Abstract). In a first case where the relative speed between the vehicle and the obstacle falls below a threshold value and the distance between the vehicle and the obstacle falls below a proximity limit, the braking torque is set to a smaller value than the engine torque (see Abstract). In a second case where the distance falls below a stop limit, which is smaller than the proximity limit, the braking torque and the engine torque are adjusted in such a way that the braking torque exceeds the engine torque (see Abstract). In other words, Kurz modifies a brake signal to set the braking torque to a value smaller than the engine torque in the first case, and modifies the brake signal to allow the braking torque to exceed the engine torque in the second case. Such modification is not, however, derived from comparing the braking torque with a brake torque threshold value as claimed. Thus, as correctly acknowledged by the Office Action in Note 6, Kurz fails to disclose all of the recited limitations.

Hrovat is directed at selective braking to front and rear brakes on one side of a vehicle to correct vehicle dynamic behavior after sudden tire rupture (col. 1, lines 7-9).

In particular, Hrovat modifies a brake signal based on a desired yaw rate once a tire rupture has been detected (col. 3, lines 58-60). If the actual yaw rate falls below an acceptable yaw rate range, then Hrovat applies the brakes to the left side of the vehicle (col. 3, lines 65-67). If the actual yaw rate exceeds the acceptable yaw rate range, then Hrovat applies the brakes to the right side of the vehicle (col. 3, line 67 to col. 4, line 3). In other words, Hrovat modifies a brake signal based on a vehicle yawing left or right after undergoing a tire rupture. Such modification is not, however, derived from comparing the braking torque with a brake torque threshold value as claimed.

Hrovat also uses a total brake torque correction to calculate front and rear components of the total desired torque (col. 4, lines 17-19). This calculation determines, in effect, the maximum brake force correction that can be applied without locking up the wheels during braking (col. 4, lines 47-49). Hrovat discloses a procedure for re-determining braking torque correction for individual tires when the desired torque correction of a particular tire is greater than the maximum torque correction available (col. 4, line 62-col. 6, line 21). In other words, Hrovat uses an antilock braking system (ABS) to slow the vehicle and correct the yaw rate once a tire rupture has been detected, without locking the inflated tires. The tire lock prevention and corresponding brake manipulation disclosed in Hrovat is not, however, applied to an automotive vehicle under a condition of approaching or following an obstacle preceding the vehicle as claimed. Rather, Hrovat fails to disclose or suggest any preceding obstacle detection at all.

Hrovat further discloses that if it is determined that the vehicle is within the desired trajectory, then an acceleration pedal sensor senses whether the accelerator is depressed (col. 6, lines 38-40). If the accelerator is not depressed, then braking torque is applied to slow the vehicle to a stop (col. 6, lines 40-42). If the accelerator is depressed, then the vehicle is not slowed to a stop by the system (col. 6, lines 42-43). In other words, the driver only retains control of the vehicle if the accelerator pedal is depressed (col. 6, lines 43-45), such as to remain ahead of a following vehicle (col. 6, lines 45-48). In other words, Hrovat modifies a brake signal based on whether or not an accelerator pedal is depressed. Such modification is not, however, derived from

comparing the monitored braking torque with a brake torque threshold value as claimed. Thus, Hrovat fails to disclose all of the recited limitations.

Yamamura fails to rectify the aforementioned deficiencies in Hrovat and Kurz. Thus, none of the cited references standing alone disclose or suggest all of the claimed limitations.

Lack of Motivation To Combine The References

Applicants direct the Examiner's attention to MPEP §2143, which states in part (emphasis added):

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation ... to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure.

The Office Action asserts that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Kurz with the braking technique of Hrovat so as to achieve the claimed invention. The Office Action does not, however, to set forth any motivation for doing so. Thus, the motivation relied upon by the Office Action must be based on improper hindsight reasoning gleaned only from Applicants' disclosure. See MPEP §2145(X)(A) (Impermissible Hindsight); and MPEP §2145(C) (Lack of Suggestion To Combine References). Hence, the Patent Office has failed to establish a *prima facie* case of obviousness.

In order to further prosecution of the pending application, Applicants further note that Kurz and Hrovat are directed at entirely different problems which teach away from their combination. See MPEP §2145(D) (References Teach Away from the Invention or Render Prior Art Unsatisfactory for Intended Purpose). As noted above, Kurz is directed at a method for braking a motor vehicle at low speeds in order to avoid a collision with an obstacle in its immediate vicinity (see Abstract), whereas Hrovat is directed at selective braking to front and rear brakes on one side of a vehicle to correct vehicle dynamic behavior after sudden tire rupture (col. 1, lines 7-9). As noted above, Hrovat fails to disclose any detection of an obstacle preceding the vehicle. One of ordinary skill in the art would not look to a tire blowout yaw correction system as in Hrovat, which necessarily operates "at speed" and fails to disclose obstacle avoidance

capabilities, to modify a low speed collision avoidance system such as Kurz, because the two are directed at entirely different problems.

Moreover, as set forth in MPEP §2143.01 (The proposed Modification Cannot Change The Principle Of Operation Of A Reference), if the proposed combination of the prior art would change the principle of operation of the prior art being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. Combining Kurz with Hrovat would result in an inoperative device, because the presence of engine torque in Hrovat (indicated by depression of the accelerator) prohibits application of the brakes (col. 6, lines 42-43), whereas Kurz applies the brakes irrespective of the presence of engine torque when the distance falls below a stop limit (see Abstract). In other words, a similar situation results in opposite responses by the two references, which would render the combination of Kurz with Hrovat inoperable or would change the principles of operation of these two references.

In brief, there is no motivation to combine the references as set forth by the Office Action. Withdrawal of the rejections under 35 U.S.C. §103(a) is earnestly solicited.

Rejections Under §102(e)

Claims 3 and 18-20 stand rejected under 35 U.S.C. §102(e) as being anticipated by Kurz. Kurz fails, however, to disclose or suggest monitoring the brake torque applied to the vehicle and modifying the brake signal based on the monitored brake torque after determination that the operator braking action is imminent as claimed. Rather, Kurz monitors engine torque by means of an engine management system (col. 3, line 23), monitors the distance between the vehicle and the obstacle (col. 3, lines 48-50), and monitors the relative speed between the vehicle and the obstacle (col. 3, lines 48-50). The monitored engine torque, distance, and relative speed are used to control the braking torque by means of a brake actuation device (col. 3, line 24). The brake torque is not, however, modified based on a monitored *brake* torque after determination that the operator braking action is imminent.

Thus Kurz fails to anticipate the claimed invention. Withdrawal of the rejection under §102(e) is earnestly solicited.

Conclusion

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested. The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

Respectfully submitted,



Daniel L. Girdwood
Reg. No. P-52,947

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Date

FOLEY & LARDNER
Suite 500, 3000 K Street, N.W.
Washington, D.C. 20007-5109
Phone: (202) 945-6112
Fax: (202) 672-5399

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